OWNER'S MANUAL

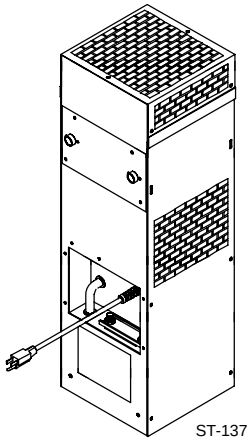
OM-627
January 1999

134 821J

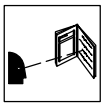
CE **And Non-CE Models**

Watermate™ 1A

1. Specifications

 ST-137 227-A	Recirculating Coolant System For Water-Cooled GTAW Torches And GMAW Guns
	Use With Guns/Torches Rated Up To 500 Amperes
	2 gal (7.6 L) Coolant Tank Capacity; Maximum Cooling Capacity: 11,000 BTU/hr At 1.25 qt/min (1.2 L/min)
	Dimensions: 9-1/4 in (235 mm) Long, 9-1/4 in (235 mm) Wide, 30-3/4 in (781 mm) High Weight: 50 lb (23 kg)
	Single-Phase Input Power, 115 VAC, 5.5 A, 50/60 Hz

2. Safety Symbol Definitions

	Means Warning! Watch Out! There are possible hazards with this procedure! The possible hazards are shown in the adjoining symbols. Symbole graphique d'avertissement! Attention! Cette procédure comporte des risques possibles! Les dangers éventuels sont représentés par les symboles graphiques joints.		Have only trained and qualified persons install, operate, or service this unit. Call your distributor if you do not understand the directions. For WELDING SAFETY and EMF information, read wire feeder and welding power source manuals. L'installation, l'exploitation et l'entretien de cet appareil doivent être confiés uniquement à des personnes qualifiées et convenablement formées. S'adresser à un distributeur si l'on ne comprend pas les directives. Pour des renseignements ayant trait à la SÉCURITÉ lors du soudage et aux champs électromagnétiques, consulter les manuels traitant les dévidoirs et les sources de courant pour le soudage.
	Beware of electric shock from wiring. Attention! Risque d'électrocution due au contact avec des fils.		Beware of moving parts. Attention! Pièces en mouvement.
	Wear safety glasses with side shields. Porter des lunettes de sécurité avec protections latérales.		Recycle or dispose of used coolant in an environmentally safe way. Recycler ou éliminer tout liquide de refroidissement usé conformément aux méthodes prescrites pour assurer la protection de l'environnement.

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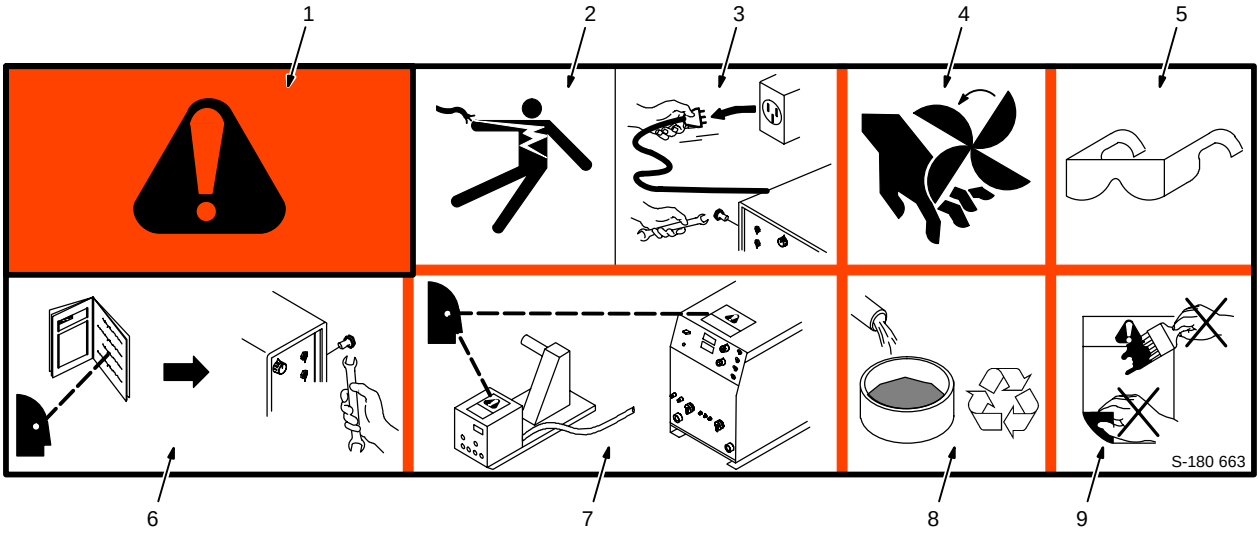
3. Warning Label Definitions For CE Products



1 Warning! Watch Out! There are possible hazards as shown by the symbols.

2 Electric shock from wiring can kill.

3 Disconnect input plug or power before working on machine.

4 Moving parts, such as fans, can cut fingers and hands and cause injury. Keep away from moving parts.

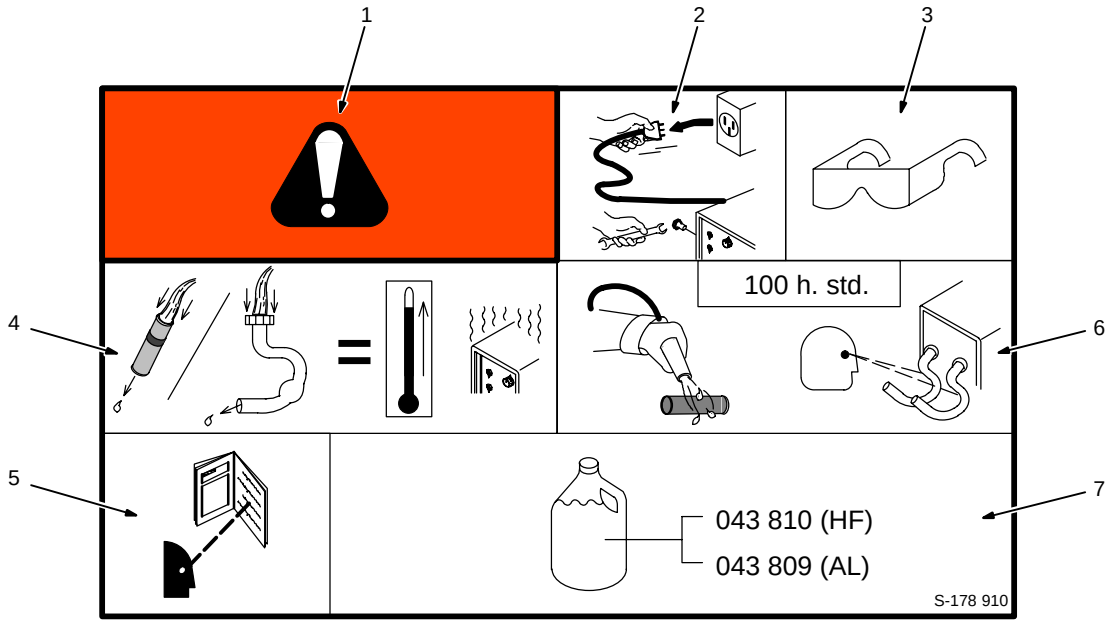
5 Wear safety glasses with side shields.

6 Read the Owner's Manual before working on this machine.

7 Read the labels on the welding power source, wire feeder, or other major equipment for welding safety information.

8 Recycle or dispose of used coolant in an environmentally safe way.

9 Do not remove or paint over (cover) the label.



1 Warning! Watch Out! There are possible hazards as shown by the symbols.

2 Disconnect input plug or power before working on machine.

3 Wear safety glasses with side shields.

4 Plugged filter or hoses cause overheating and damage.

5 Read Owner's Manual.

6 Check and clean filter every 100 hours; also check condition of hoses.

7 Use Low Conductivity Coolant No. 043 810 for High-Frequency assisted or Gas Tungsten Arc Welding applications. Use Aluminum Protecting Coolant No. 043 809 where coolant contacts aluminum parts or for Gas Metal Arc Welding applications or where High Frequency is not used.

4/96

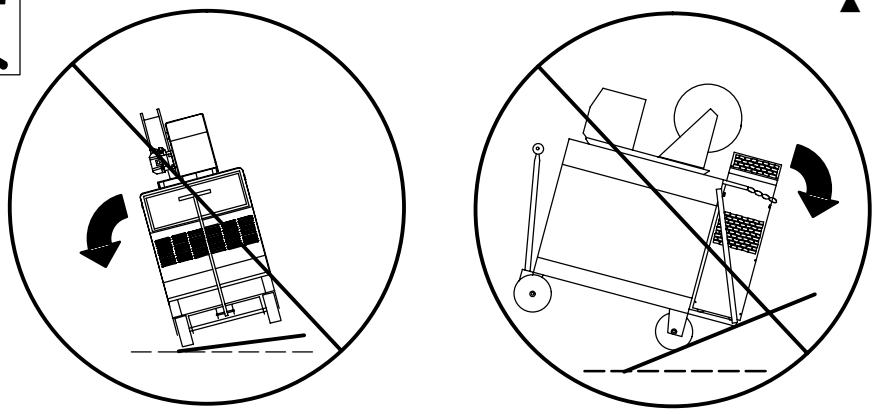
4. Rating Label

5. Symbols And Definitions

NOTE	*Some symbols are found only on CE products.*

A	Amperes	~	Alternating Current	V	Voltage Input		Circulating Unit With Coolant Pump
V	Volts		Water (Coolant) In-put		Water (Coolant) Output		Line Connection
	Protective Earth (Ground)	IP	Degree Of Protection	I_1	Primary Current	Hz	Hertz
I	On	O	Off	U_1	Primary Voltage	1~	Single Phase

6. Tipping



▲ **Be careful when placing or moving unit over uneven surfaces.**

Ref ST-802 055

7. Preparing Cooling Unit For Use

Tools Needed:

11/16 in

Fittings have 5/8-18 left-hand threads. Connect hoses with proper fittings as shown.

1 Flow Indicator

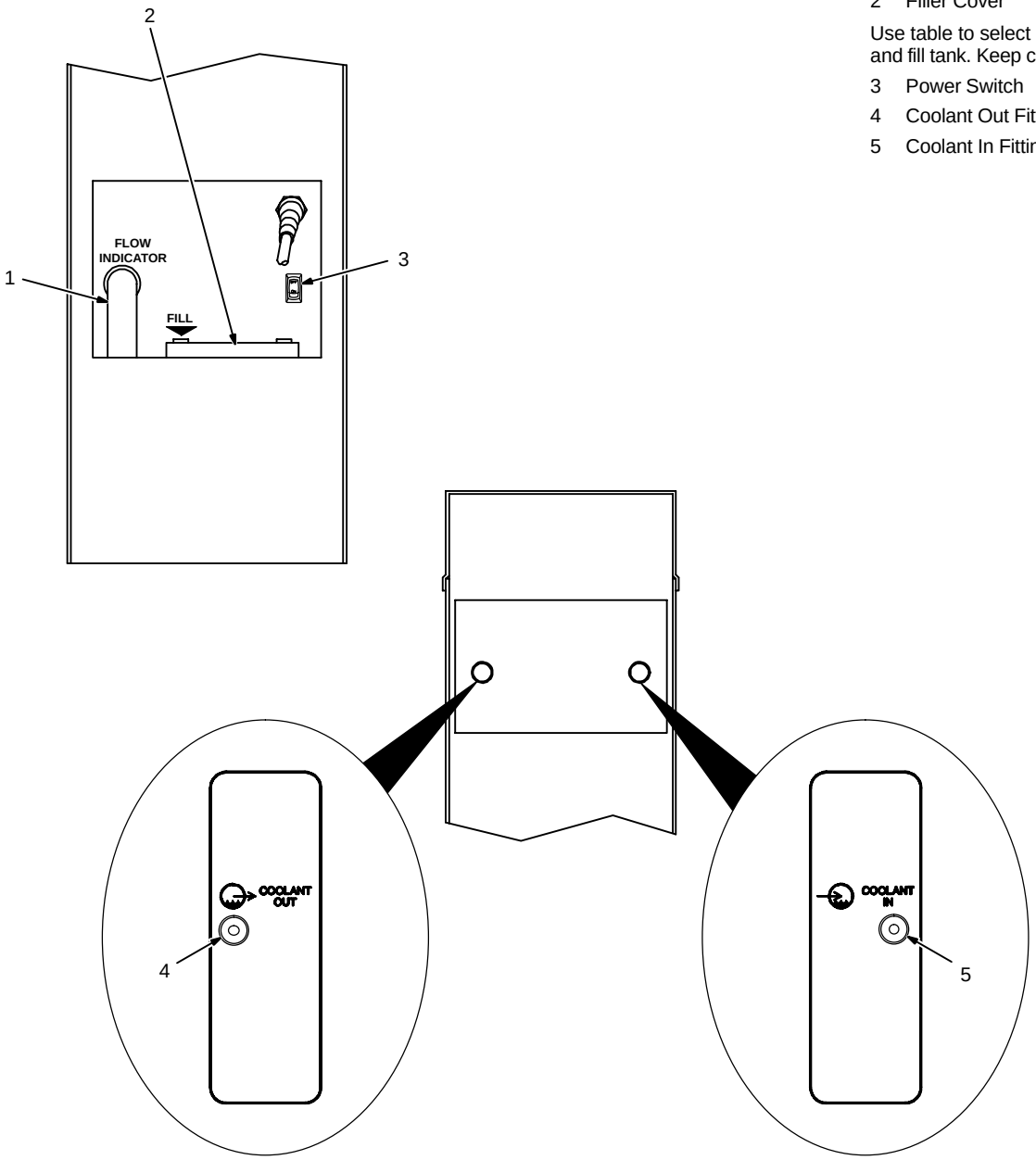
2 Filler Cover

Use table to select proper coolant, and fill tank. Keep coolant level full.

3 Power Switch

4 Coolant Out Fitting

5 Coolant In Fitting



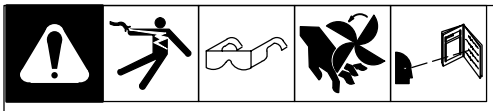
Application	GTAW Or Where HF* Is Used	GMAW Or Where HF* Is Not Used	Where Coolant Contacts Aluminum Parts
Coolant	MILLER Low Conductivity Coolant No. 043 810**; Distilled Or Deionized Water OK Above 32° F (0° C)	MILLER Low Conductivity Coolant No. 043 810**; Or MILLER Aluminum Protecting Coolant No. 043 809**; Distilled Or Deionized Water OK Above 32° F (0° C)	MILLER Aluminum Protecting Coolant No. 043 809**

*HF: High Frequency Current

**MILLER coolants protect to -37° F (-38°C) and resist algae growth.

Ref. ST-800 496 / Ref. ST-136 398 / Ref. ST-099 157-A

8. Connections

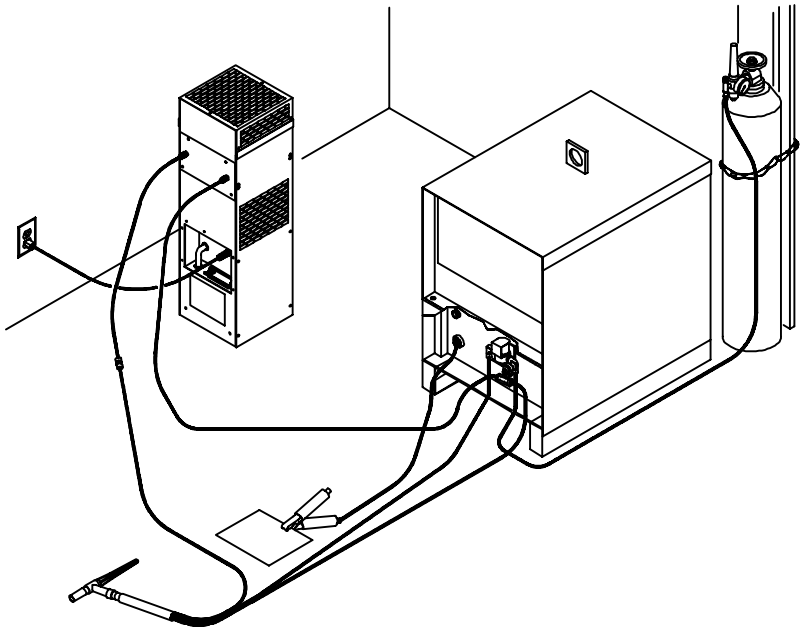


To prevent overheating, make sure cooling unit is positioned so airflow is not restricted.

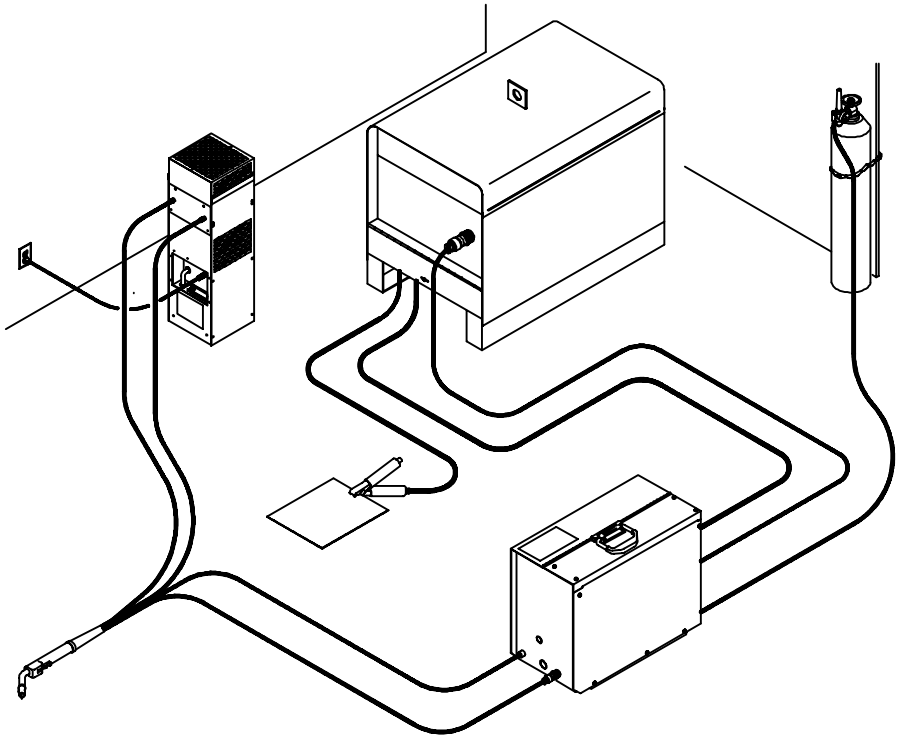
▲ **When using coolant system with a welding power source with a water valve, bypass water valve on welding power source by connecting directly to torch/gun to avoid overheating, or damage to coolant system.**

▲ **To prevent tipping when placing unit on uneven or tilting surfaces, properly secure the coolant system to a wall, stationary support, or equivalent rigid structure.**

GTAW Connections

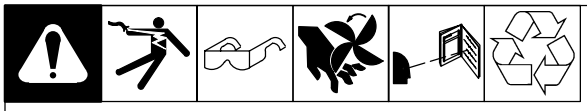


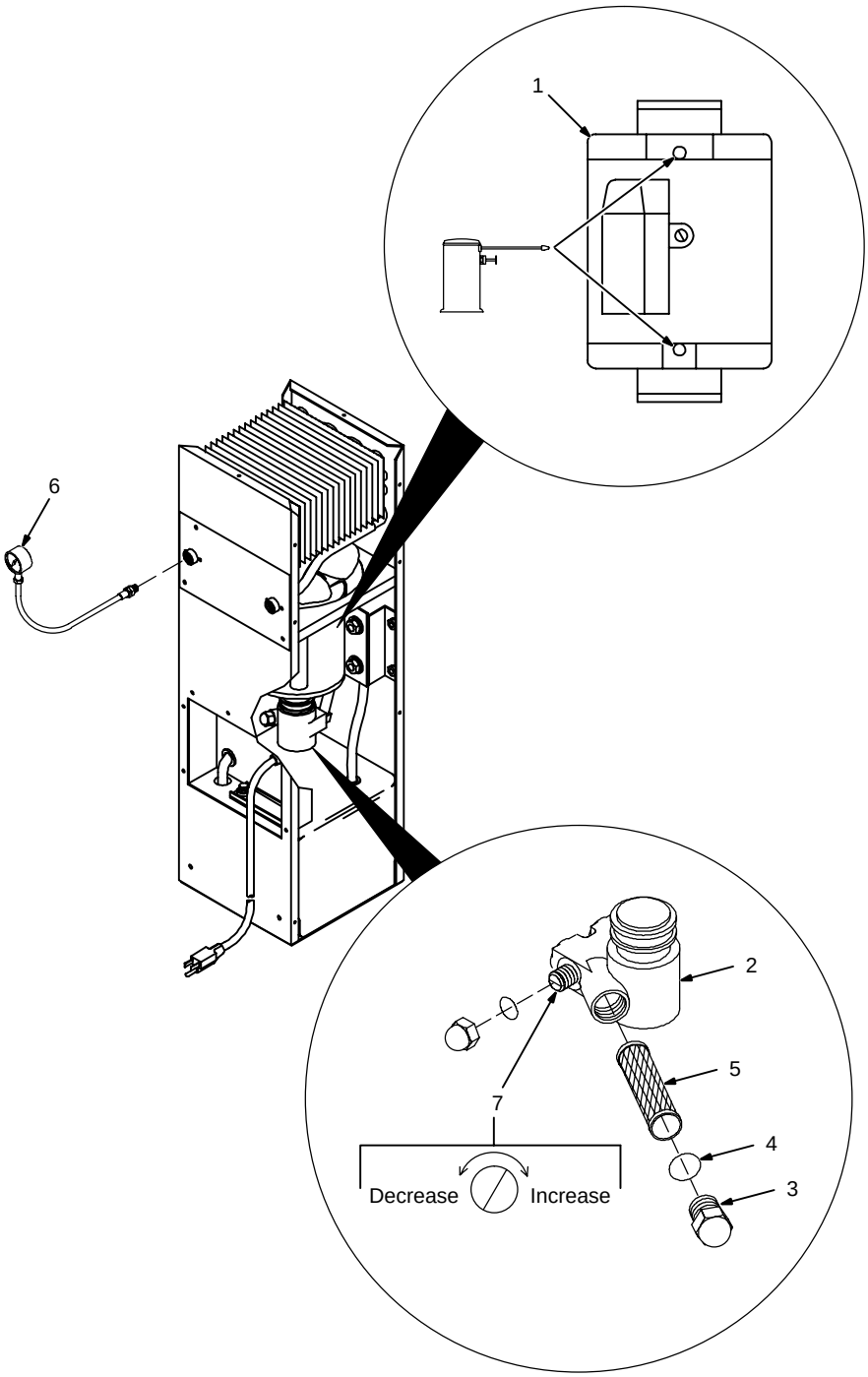
GMAW Connections



ST-800 481 / ST-800 482

9. Coolant Maintenance And Oiling Motor





Turn Off and unplug unit.

1 Motor

Remove plugs and put about 15 drops of SAE 20 motor oil into each oil port. Replace plugs, and reassemble unit.

2 Coolant Pump

3 Acorn Nut

Place cloth or suitable container under nut, and remove nut.

4 Rubber Washer

5 Strainer

Rinse strainer with clean water.

Reinstall parts. Remove cloth or container, and reinstall wrapper.

☞ *Relief valve is factory set at 60 psi (414 kPa), and normally needs no adjustment: Only adjust if replacing motor.*

6 Pressure Gauge

7 Relief Valve Adjustment Screw

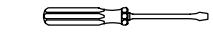
Connect gauge to Coolant Out fitting as shown. Block or plug any output fitting on gauge.

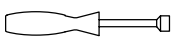
Turn On power, and adjust pressure adjustment screw as needed.

Turn Off power. Disconnect gauge and reinstall nut and wrapper.

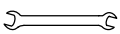
☞ *If replacing hoses, use hoses compatible with ethylene glycol, such as Buna-n, Neoprene, or Hypalon. NOTE: Oxy-acetylene hoses are not compatible with any product containing ethylene glycol.*

Tools Needed:





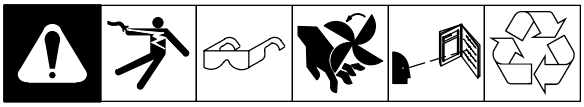
3/8 in



15/16, 3/4 in

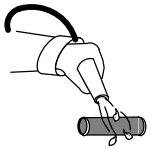
Ref. ST-800 483-A

10. Routine Maintenance

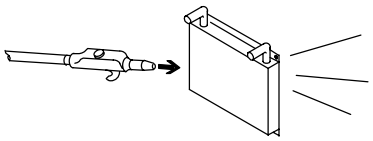


▲ **Turn Off all power and unplug unit before maintaining.**

1 Month

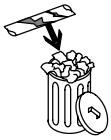


Clean Coolant Filter

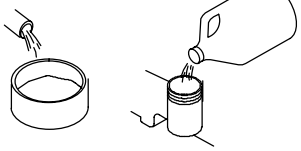


Blow Out Heat Exchanger Fins

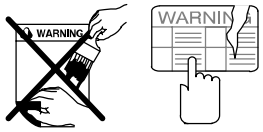
6 Months



Replace Cracked Hoses

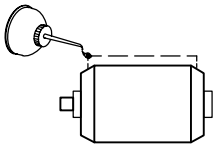


Change Coolant (If Using Water)

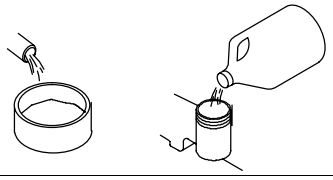


Replace Unreadable Labels

12 Months

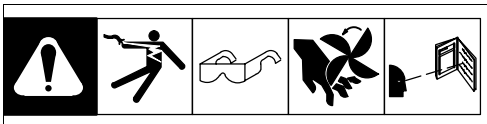


Oil Motor

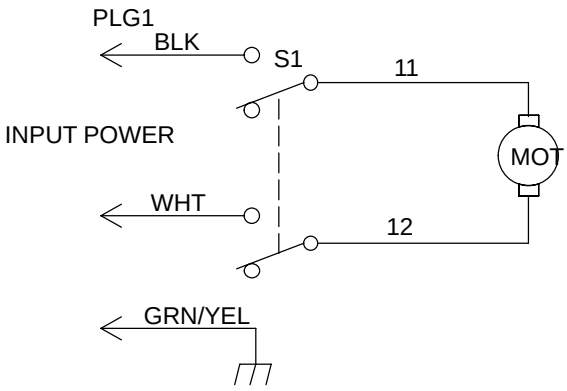


Change Coolant (If Using MILLER Coolant)

11. Troubleshooting



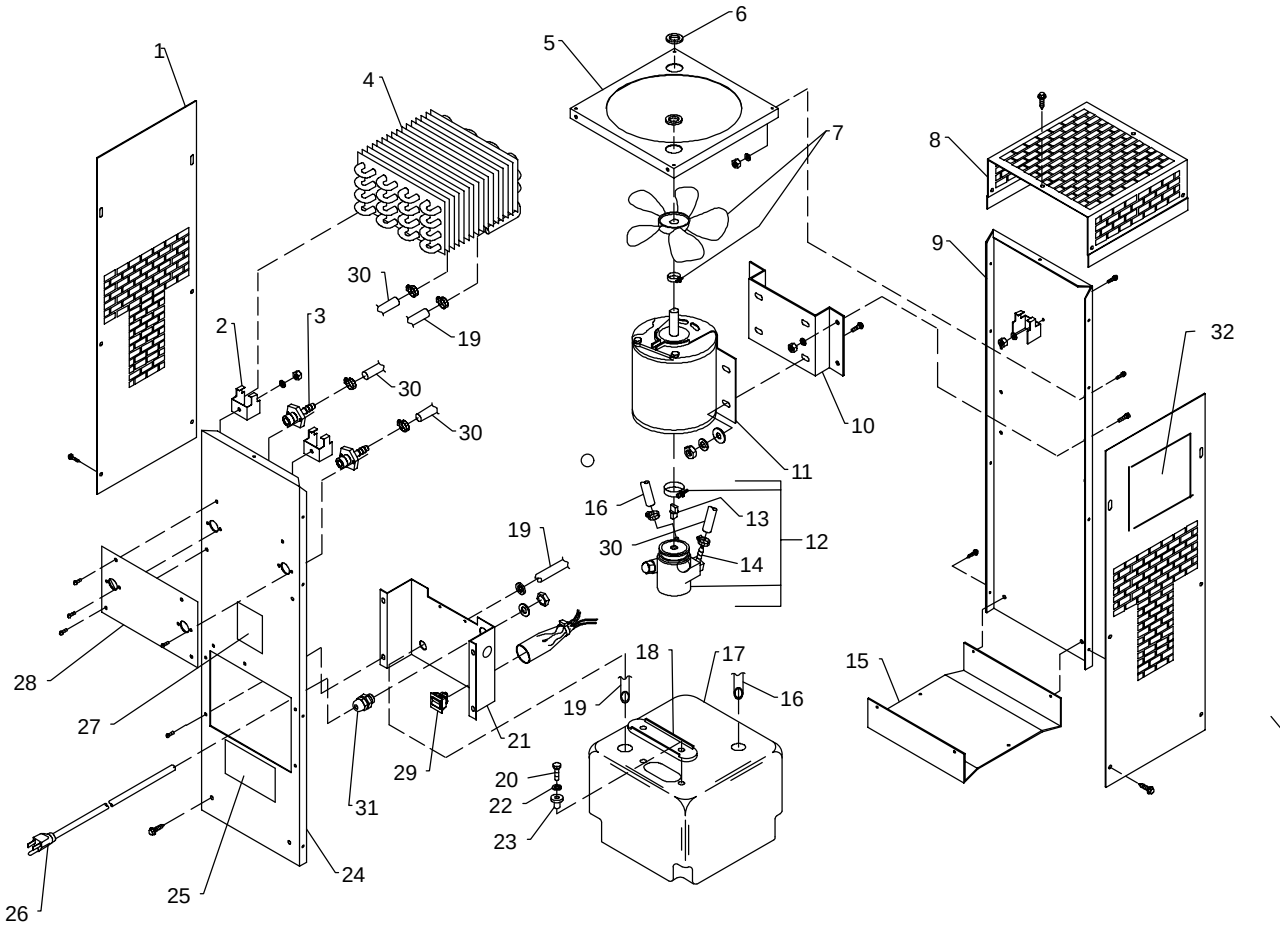
Trouble	Remedy
Coolant system does not work.	Be sure input power cord is plugged in to energized receptacle.
	Check line fuses or circuit breaker, and replace or reset if necessary.
	Motor overheated. Unit starts running when motor has cooled.
	Have Factory Authorized Service Agent check Power switch and motor.
Decreased or no coolant flow.	Add coolant.
	Check for clogged hoses or coolant filter.
	Disconnect pump, and check for sheared coupling. Replace coupling if necessary.



SA-135 796-D

Figure 7-1. Circuit Diagram For 115 And 230 Volts Models

12. Parts List



☞ *Hardware is common and not available unless listed.*

ST-137 167-H

Figure 11-1. Complete Assembly

Item No.	Dia. Mkgs.	Part No.	Description	Quantity
			Figure 11-1. Complete Assembly	
1		182 446	PANEL, side	2
2		097 966	BRACKET, mtg radiator	3
3		081 543	FITTING, coolant	2
4		097 510	RADIATOR, 8.000 x 8.750 x 4.187 .375 inlet/outlet	1
5		097 238	BAFFLE, air	1
6		030 170	BUSHING, snap-in nyl .750z	2
7		136 318	BLADE, fan 8 in 5wg 37deg .500 bore CCW	1
8		097 236	COVER, top	1
9		108 379	PANEL, rear	1
10		190 032	BRACKET, mtg motor/pump	1
11	MOT	173 263	MOTOR, 1/4hp 115VAC 50/60Hz 1425/1725RPM	1
12		135 804	PUMP, coolant (consisting of)	1
13		134 795	.. COUPLER, drive pump	1
14		126 992	.. FITTING, hose brs barbed elb M 3/8tbg x 3/8NPT	2
		146 249	.. STRAINER, screen 100 x 90 mesh 2.215 lg	1
15		108 377	SKID, base	1
16		124 919	TUBING, PVC .375 ID x .675 OD (order by ft)	2ft

Item No.	Dia. Mkgs.	Part No.	Description	Quantity

Figure 11-1. Complete Assembly

17		175 429	TANK, coolant	1
18		081 936	COVER, filler	1
19		153 202	TUBING, PVC .375 ID x .125 mtg wall (order by ft)	3ft
20		086 412	SCREW, thumb brs 10-32 x 1.000 knurled	2
21		177 400	BRACKET, mtg components	1
22		010 913	WASHER, flat brs .218 ID x .460 OD x .031thk	2
23		081 895	NUT, well 10-32 blind fastener	2
24		+108 378	PANEL, front	1
25		180 663	LABEL, warning general precautionary, wordless CE	1
26	PLG1	176 836	CABLE, pwr 10ft 6 in 16ga 3/c	1
27		178 910	LABEL, caution incorrect coolant, wordless CE	1
28			NAMEPLATE, (order by model and serial number)	1
29	S1	177 396	SWITCH, rocker DPST 15A 250VAC	1
30		605 422	HOSE, NPRN BRD. No 1 x .375 ID (order by ft)	3ft
31		139 042	STRAIN RELIEF	1
32		192 449	LABEL, warning / caution	2

+When ordering a component originally displaying a precautionary label, the label should also be ordered.
BE SURE TO PROVIDE MODEL AND SERIAL NUMBER WHEN ORDERING REPLACEMENT PARTS.

Declaration of Conformity for European Community (CE) Products

NOTE ☞	*This information is provided for units with CE certification (see rating label on unit).*

Manufacturer's Name: Miller Electric Mfg. Co.

Manufacturer's Address: 1635 W. Spencer Street
Appleton, WI 54914 USA

Declares that the product: **WATERMATE™ 1A**

conforms to the following Directives and Standards:

Directives

Low Voltage Directive: 73/23/EEC

Machinery Directives: 89/392/EEC, 91/368/EEC, 93/C 133/04, 93/68/EEC

Standards

Safety Requirements for Arc Welding Equipment part 1: EN 60974-1: 1989

Arc Welding Equipment Part 2: Cooling Systems: IEC 974-2 (July 1997 - Draft revision)

Degrees of Protection provided by Enclosures (IP code): IEC 529: 1989

European Contact: Mr. Luigi Vacchini, Managing Director
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Via Privata Iseo
20098 San Giuliano
Milanese, Italy

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